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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,127	09/28/2001	Jens P. Tagore-Brage	3740-000117	1793

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EXAMINER	
YAO, KWANG BIN	
ART UNIT	**PAPER NUMBER**
2667	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/965,127	TAGORE-BRAGE ET AL.	
	Examiner	Art Unit	
	Kwang B. Yao	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/28/01; 1/4/02; 1/8/02; 2/4/02; 3/29/02
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because there are no descriptive legends in Figs. 1, 2, 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-59 are rejected under 35 U.S.C. 102(e) as being anticipated by Dai et al. (US 6,658,016).

Dai et al. discloses a communication system comprising the following features: regarding claim 1, a switching unit for switching a data packet, the switching unit comprising: a plurality of devices (FIG. 1, SWITCH 12, 30) each adapted to receive incoming data packets from an external network on an input port and transmit outgoing data packets through an output port to the external network, means for interconnecting the plurality of devices (FIG. 1, SWITCH 12, 30) in a ring (FIG. 1, DATA RING 18, CONTROL RING 24) configuration so as to enable communication of data between the plurality of devices (FIG. 1, SWITCH 12, 30), means for determining, for each incoming data packet, a receiving device (FIG. 1, SWITCH 12) to receive and output the data packet, and to generate corresponding receiving device (FIG. 1, SWITCH 12) information, and means for transporting the receiving device (FIG. 1, SWITCH 12) information from the determining means to the devices (FIG. 1, SWITCH 12, 30), the devices (FIG. 1, SWITCH 12, 30) being adapted to: select one or more data packets to be switched, each data packet being held by a respective device (FIG. 1, SWITCH 12), and a first number of times (cycles, column 19, lines 60-64): forward, at least substantially simultaneously, at least part of each of the data packets and pertaining receiving device (FIG. 1, SWITCH 12) information to a next device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), receive, at least substantially simultaneously and from the interconnecting means (FIG. 1, lines 9 and 33), the at least part of the selected data packets and the pertaining receiving device (FIG. 1,

SWITCH 12) information, and determine, at least substantially simultaneously in each device (FIG. 1, SWITCH 12) having received at least part of a data packet, on the basis of the pertaining receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12) and, if so, storing (FIG. 1, DATA RING 18, CONTROL RING 24) a copy (FIG. 8, STEP 704) of the at least part of the data packet in the device (FIG. 1, SWITCH 12), wherein: the transporting means interconnects the determining means and the devices (FIG. 1, SWITCH 12, 30) in a daisy chain manner, the determining means being positioned at one end of the daisy chain and a final device (FIG. 1, SWITCH 12) at another end thereof, the determining means is adapted to output receiving device (FIG. 1, SWITCH 12) information for the devices (FIG. 1, SWITCH 12, 30) a predetermined number of times (cycles, column 19, lines 60-64) and to perform each outputting at least substantially simultaneously with a forwarding step of the devices (FIG. 1, SWITCH 12, 30), and the devices (FIG. 1, SWITCH 12, 30), except the final device (FIG. 1, SWITCH 12), being adapted to: receive receiving device (FIG. 1, SWITCH 12) information from a previous device (FIG. 1, SWITCH 12) or the determining means along the transporting means, the receiving being performed at least substantially simultaneously with the receiving of the at least part of the data packets, and forward at least part of the received receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the transporting means, the forwarding being performed at least substantially simultaneously with the forwarding of the at least part of the data packets; regarding claim 2, wherein the interconnecting means (FIG. 1, lines 9 and 33) and the transporting comprise a plurality of parallel connections between the devices (FIG. 1, SWITCH 12, 30); regarding claim 3, wherein a first number of the parallel connections are adapted to

transport the at least part of the data packets between the devices (FIG. 1, SWITCH 12, 30) and where a second number of the parallel connections are adapted to transport the pertaining receiving device (FIG. 1, SWITCH 12) information between the devices (FIG. 1, SWITCH 12, 30); regarding claim 4, wherein each of the devices (FIG. 1, SWITCH 12, 30) is adapted to, when determining whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12), use only part of the receiving device (FIG. 1, SWITCH 12) information in the determination; regarding claim 5, wherein the determining means comprise: means for, on the basis of at least part of a data packet, providing receiving device (FIG. 1, SWITCH 12) identification, and an arbiter adapted to: receive the receiving device (FIG. 1, SWITCH 12) identification relating to a number of data packets, select, on the basis of the receiving device (FIG. 1, SWITCH 12) identification, a switching order of the data packets, and output to the transporting means receiving device (FIG. 1, SWITCH 12) information relating to data packets at least part of each of which may be transported on the interconnecting means (FIG. 1, lines 9 and 33) at the same time; regarding claim 6, wherein the arbiter is adapted to output, each of the predetermined number of times (cycles, column 19, lines 60-64), receiving device (FIG. 1, SWITCH 12) information for one device (FIG. 1, SWITCH 12), where the receiving device (FIG. 1, SWITCH 12) information is output in an order corresponding to the order of the devices (FIG. 1, SWITCH 12, 30) on the transport means; regarding claim 7, wherein the devices (FIG. 1, SWITCH 12, 30) are adapted to select the one or more data packets to be switched in accordance with receiving device (FIG. 1, SWITCH 12) information received from the determining means; regarding claim 8, means for receiving or providing a clocking signal having a number of timely spaced pulses, and wherein the devices (FIG. 1, SWITCH 12, 30) are adapted

to perform, in each of the number of times (cycles, column 19, lines 60-64), each receiving step in accordance with the same pulse(s), each forwarding step in accordance with the same pulse(s), and each determination step in accordance with the same pulse(s); regarding claim 9, wherein the devices (FIG. 1, SWITCH 12, 30) each are adapted to perform the receiving, forwarding and determination steps relating to one of the first number of times (cycles, column 19, lines 60-64), in correlation to the same pulse; regarding claim 10, wherein the first number of times (cycles, column 19, lines 60-64) is equal to the number of devices (FIG. 1, SWITCH 12, 30) on the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 11, wherein the devices (FIG. 1, SWITCH 12, 30) are adapted to perform a second number of super cycles each comprising the first number of times (cycles, column 19, lines 60-64) of the selecting, forwarding, receiving and determining steps, and wherein the devices (FIG. 1, SWITCH 12, 30) in one super cycle are adapted to select the data packets in accordance with receiving device (FIG. 1, SWITCH 12) information output by the determining means in a previous super cycle; regarding claim 12, wherein the devices (FIG. 1, SWITCH 12, 30) are adapted to establish a priority for each incoming data packet; regarding claim 13, wherein: the devices (FIG. 1, SWITCH 12, 30) are adapted to establish, for each incoming data packet, control information relating to a destination address, a source device (FIG. 1, SWITCH 12) identity, and a priority, and to provide the determining means with the control information, the determining means being adapted to provide the receiving device (FIG. 1, SWITCH 12) information on the basis of the control information; regarding claim 14, wherein the devices (FIG. 1, SWITCH 12, 30) are also adapted to, the first number of times (cycles, column 19, lines 60-64), alter the receiving device (FIG. 1, SWITCH 12) information received from the interconnecting means (FIG. 1, lines 9 and 33) and forward

the altered receiving device (FIG. 1, SWITCH 12) information to the subsequent device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 15, wherein the receiving device (FIG. 1, SWITCH 12) information is a bit mask having a bit relate to each of the devices (FIG. 1, SWITCH 12, 30), and wherein the devices (FIG. 1, SWITCH 12, 30) are adapted to alter the receiving device (FIG. 1, SWITCH 12) information by shifting the bit mask by a predetermined number of bits; regarding claim 16, wherein each device (FIG. 1, SWITCH 12) is adapted to determine that the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12) when a bit at a predetermined position in the bit mask has a predetermined value; regarding claim 17, a switching unit for switching a data packet, the switching unit comprising: a plurality of devices (FIG. 1, SWITCH 12, 30) each adapted to receive incoming data packets from an external network on an input port and transmit outgoing data packets through an output port to the external network, means for determining, for each incoming data packet, a receiving device (FIG. 1, SWITCH 12) to receive and output the data packet, and to generate corresponding receiving device (FIG. 1, SWITCH 12) information, and means for interconnecting the plurality of devices (FIG. 1, SWITCH 12, 30) in a ring (FIG. 1, DATA RING 18, CONTROL RING 24) configuration so as to enable communication of data between the plurality of devices (FIG. 1, SWITCH 12, 30), means for transporting the receiving device (FIG. 1, SWITCH 12) information from the determining means to the devices (FIG. 1, SWITCH 12, 30), the devices (FIG. 1, SWITCH 12, 30) being adapted to: select one or more data packets to be switched, each data packet being held by a respective device (FIG. 1, SWITCH 12), and a first number of times (cycles, column 19, lines 60-64): forward, at least substantially simultaneously, at least part of each of the data packets and pertaining receiving

device (FIG. 1, SWITCH 12) information to a next device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), receive, at least substantially simultaneously and from the interconnecting means (FIG. 1, lines 9 and 33), the at least part of the selected data packets and pertaining receiving device (FIG. 1, SWITCH 12) information, and determine, at least substantially simultaneously in each device (FIG. 1, SWITCH 12) having received at least part of a data packet, from the pertaining receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12) and, if so, storing (FIG. 1, DATA RING 18, CONTROL RING 24) a copy (FIG. 8, STEP 704) of the at least part of the data packet in the device (FIG. 1, SWITCH 12), wherein the first number of times (cycles, column 19, lines 60-64) is identical to the number of devices (FIG. 1, SWITCH 12, 30); regarding claim 18, wherein an additional element, such as a CPU, is connected to a device (FIG. 1, SWITCH 12), and wherein the device (FIG. 1, SWITCH 12) is adapted to, on the basis of receiving device (FIG. 1, SWITCH 12) information received, determine whether the pertaining at least part of a data packet received is to be output by the output port of the device (FIG. 1, SWITCH 12) or to be transmitted to the additional element; regarding claim 19, wherein at least one of the devices (FIG. 1, SWITCH 12, 30) has a number of output ports, the at least one of the devices (FIG. 1, SWITCH 12, 30) being adapted to forward all data packets received to the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 20, the device (FIG. 1, SWITCH 12) comprising: means for receiving at least part of a data packet and pertaining receiving device (FIG. 1, SWITCH 12) information from the interconnecting means (FIG. 1, lines 9 and 33), means for determining, on the basis of the receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the actual device

(FIG. 1, SWITCH 12), means for copying (FIG. 8, STEP 704) the at least part of the data packet if the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), means for forwarding the at least part of the data packet and pertaining receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), means for receiving receiving device (FIG. 1, SWITCH 12) information from the transporting means, and means for forwarding at least part of the receiving device (FIG. 1, SWITCH 12) information along the transporting means, the device (FIG. 1, SWITCH 12) being adapted to perform the receiving steps simultaneously and the forwarding steps simultaneously; regarding claim 21, wherein the means for determining whether the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12) are adapted to perform the determination using only part of the receiving device (FIG. 1, SWITCH 12) information; regarding claim 22, wherein the means for receiving and forwarding the at least parts of the data packets and receiving device (FIG. 1, SWITCH 12) information on the interconnecting means (FIG. 1, lines 9 and 33) comprise means for receiving and forwarding a plurality of parallel connections of the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 23, wherein the means for transmitting and receiving the at least parts of the data packets and pertaining receiving device (FIG. 1, SWITCH 12) information are adapted to transmit and receive the at least part of the data packet over a first number of the parallel connections between the devices (FIG. 1, SWITCH 12, 30) and the receiving device (FIG. 1, SWITCH 12) information over a second number of the parallel connections between the devices (FIG. 1, SWITCH 12, 30); regarding claim 24, further comprising means for altering the receiving device (FIG. 1, SWITCH 12) information received from the interconnecting means

(FIG. 1, lines 9 and 33); regarding claim 25, wherein the receiving device (FIG. 1, SWITCH 12) information is a bit mask, and wherein the altering means are adapted to alter the receiving device (FIG. 1, SWITCH 12) information by shifting the bit mask by a predetermined number of bits; regarding claim 26, wherein the means for determining whether the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12) is adapted to determine this when a bit in the bit mask at a predetermined position has a predetermined value; regarding claim 27, a method of switching a data packet in a switching unit comprising: a plurality of devices (FIG. 1, SWITCH 12, 30) adapted to receive incoming data packets from an external network on an input port and transmit outgoing data packets through an output port to said external network, means for determining, for each incoming data packet, a receiving device (FIG. 1, SWITCH 12) to receive and output the data packet and for generating corresponding receiving device (FIG. 1, SWITCH 12) information, means for interconnecting the plurality of devices (FIG. 1, SWITCH 12, 30) in a ring (FIG. 1, DATA RING 18, CONTROL RING 24) configuration so as to enable communication of data packets between the plurality of devices (FIG. 1, SWITCH 12, 30), and transporting means interconnecting the determining means and the devices (FIG. 1, SWITCH 12, 30) in a daisy chain manner, the determining means being positioned at one end of the daisy chain and a final device (FIG. 1, SWITCH 12) at another end thereof, where each of the devices (FIG. 1, SWITCH 12, 30) is adapted to: receive at least part of a data packet and pertaining receiving device (FIG. 1, SWITCH 12) information from the interconnecting means (FIG. 1, lines 9 and 33), determine, on the basis of the receiving device (FIG. 1, SWITCH 12) information, whether the pertaining at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), copy (FIG. 8, STEP 704) the at least part of the data packet if the

at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), and forward the at least part of the data packet and pertaining receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), the method comprising a super cycle comprising the steps of: at least substantially simultaneously selecting one or more data packets to be switched, each data packet being held by a respective device (FIG. 1, SWITCH 12), and a number of times (cycles, column 19, lines 60-64): at least substantially simultaneously: forward at least part of each of the data packets and pertaining receiving device (FIG. 1, SWITCH 12) information from one device (FIG. 1, SWITCH 12) to a next device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), output, from the determining means, receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the transporting means, forward, in each device (FIG. 1, SWITCH 12) having received receiving device (FIG. 1, SWITCH 12) information from the transporting means, at least part of the received receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) on the transporting means, at least substantially simultaneously: receive from the interconnecting means (FIG. 1, lines 9 and 33) the at least part of the selected data packets and pertaining receiving device (FIG. 1, SWITCH 12) information, and receive the receiving device (FIG. 1, SWITCH 12) information from the transporting means, at least substantially simultaneously, in each next device (FIG. 1, SWITCH 12) receiving at least part of a data packet, determine, on the basis of the pertaining receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12); regarding claim 28, wherein the step of forwarding information along the interconnecting means (FIG. 1, lines 9 and

33) comprises transmitting the information along a plurality of parallel connections between the devices (FIG. 1, SWITCH 12, 30); regarding claim 29, wherein the step of forwarding information along the interconnecting means (FIG. 1, lines 9 and 33) comprises transmitting the data packets along a first number of the parallel connections between the devices (FIG. 1, SWITCH 12, 30) and the receiving device (FIG. 1, SWITCH 12) information along a second number of the parallel connections between the devices (FIG. 1, SWITCH 12, 30); regarding claim 30, wherein the step of determining whether the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12) uses only part of the pertaining receiving device (FIG. 1, SWITCH 12) information; regarding claim 31, comprising a number of super cycles wherein, in one or more first super cycle(s), the determining means determines, on the basis of at least part of a number of data packets received by the devices (FIG. 1, SWITCH 12, 30), the corresponding receiving device (FIG. 1, SWITCH 12) information, and outputs receiving device (FIG. 1, SWITCH 12) information relating to data packets at least part of which may be transported simultaneously on the interconnecting means (FIG. 1, lines 9 and 33) in a subsequent super cycle; regarding claim 32, providing a clocking signal having a number of timely spaced pulses, and wherein: in accordance with the same pulse(s), each device (FIG. 1, SWITCH 12) performs the forwarding steps and the determining means performs the outputting step, in accordance with the same pulse(s), each device (FIG. 1, SWITCH 12) performs the receiving steps, and in accordance with the same pulse(s), each device (FIG. 1, SWITCH 12) performs the determining step; regarding claim 33, wherein the forwarding steps, receiving steps, and determining steps in a super cycle are each performed a number of times (cycles, column 19, lines 60-64) equal to the number of devices (FIG. 1, SWITCH 12, 30) in the unit; regarding

claim 34, the step of a device (FIG. 1, SWITCH 12) establishing a priority for each data packet received by a device (FIG. 1, SWITCH 12); regarding claim 35, the devices (FIG. 1, SWITCH 12, 30) establishing, for each incoming data packet, control information for each incoming data packet, control information comprising information relating to a destination address, a source device (FIG. 1, SWITCH 12) identity, and a priority and providing the determining means with the control information, the determining means providing the receiving device (FIG. 1, SWITCH 12) information on the basis of the control information received; regarding claim 36, the step of the devices (FIG. 1, SWITCH 12, 30) altering the receiving device (FIG. 1, SWITCH 12) information received from the transporting means before forwarding the received information to the next device (FIG. 1, SWITCH 12) on the transporting means; regarding claim 37, wherein the receiving device (FIG. 1, SWITCH 12) information is a bit mask having a bit relate to each of the receiving devices (FIG. 1, SWITCH 12, 30) of the plurality of devices (FIG. 1, SWITCH 12, 30), and wherein the step of altering the bit mask comprises shifting the bit mask by a predetermined number of bits; regarding claim 38, wherein the step of determining, on the basis of the pertaining receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12) is performed on only part of the receiving device (FIG. 1, SWITCH 12) information; regarding claim 39, a plurality of devices (FIG. 1, SWITCH 12, 30) adapted to receive incoming data packets from an external network on an input port and transmit outgoing data packets through an output port to said external network, means for determining, for each incoming data packet, a receiving device (FIG. 1, SWITCH 12) to receive and output the data packet and for generating corresponding receiving device (FIG. 1, SWITCH 12) information, and means for interconnecting the plurality of devices (FIG. 1,

SWITCH 12, 30) in a ring (FIG. 1, DATA RING 18, CONTROL RING 24) configuration so as to enable communication of data packets between the plurality of devices (FIG. 1, SWITCH 12, 30), where each of the devices (FIG. 1, SWITCH 12, 30) is adapted to: receive at least part of a data packet and pertaining receiving device (FIG. 1, SWITCH 12) information, determine, on the basis of the receiving device (FIG. 1, SWITCH 12) information, whether the pertaining at least part of a data packet is intended for the actual device (FIG. 1, SWITCH 12), copy (FIG. 8, STEP 704) the at least part of the data packet if the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), and forward the at least part of the data packet and pertaining receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), the method comprising the steps of: selecting, at least substantially simultaneously, one or more data packets to be switched, each data packet being held by a respective device (FIG. 1, SWITCH 12), and a number of times (cycles, column 19, lines 60-64): forwarding, at least substantially simultaneously, at least a part of each of the data packets and pertaining receiving device (FIG. 1, SWITCH 12) information from one device (FIG. 1, SWITCH 12) to a next device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33), receiving, in the next devices (FIG. 1, SWITCH 12, 30) and at least substantially simultaneously, the at least part of the selected data packets and pertaining receiving device (FIG. 1, SWITCH 12) information, and determining, at least substantially simultaneously in each next device (FIG. 1, SWITCH 12) receiving at least part of a data packet, whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12) and, if so, storing (FIG. 1, DATA RING 18, CONTROL RING 24) a copy (FIG. 8, STEP 704) of the at least part of the data packet in the device (FIG. 1,

SWITCH 12), wherein the number of times (cycles, column 19, lines 60-64) equals the number of devices (FIG. 1, SWITCH 12, 30); regarding claim 40, wherein an additional element, such as a CPU, is connected to a device (FIG. 1, SWITCH 12), and wherein the device (FIG. 1, SWITCH 12), on the basis of receiving device (FIG. 1, SWITCH 12) information received, determines whether the pertaining at least part of a data packet received is to be output by the output port of the device (FIG. 1, SWITCH 12) or to be transmitted to the additional element; regarding claim 41, wherein at least one of the devices (FIG. 1, SWITCH 12, 30) has a number of output ports, the at least one of the devices (FIG. 1, SWITCH 12, 30) forwarding all incoming data packets to the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 42, a switching unit for switching a data packet, the switching unit comprising: a plurality of devices (FIG. 1, SWITCH 12, 30) each adapted to receive incoming data packets from an external network on an input port and transmit outgoing data packets through an output port to the external network, means for determining, for each incoming data packet, a receiving device (FIG. 1, SWITCH 12) to receive and output the data packet and for generating corresponding receiving device (FIG. 1, SWITCH 12) information, and means for interconnecting the plurality of devices (FIG. 1, SWITCH 12, 30) in a ring (FIG. 1, DATA RING 18, CONTROL RING 24) configuration so as to enable communication of data packets between the plurality of devices (FIG. 1, SWITCH 12, 30), where each of the devices (FIG. 1, SWITCH 12, 30) is adapted to: receive at least part of a data packet and pertaining receiving device (FIG. 1, SWITCH 12) information along the interconnecting means (FIG. 1, lines 9 and 33) from another device (FIG. 1, SWITCH 12), determine, on the basis of the receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the actual device (FIG. 1,

SWITCH 12), copy (FIG. 8, STEP 704) the at least part of the data packet if the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), alter the receiving device (FIG. 1, SWITCH 12) information, and forward the at least part of the data packet and altered pertaining receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 43, wherein all devices (FIG. 1, SWITCH 12, 30) are adapted to perform, during the step of determining whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12), the same determination method; regarding claim 44, wherein all devices (FIG. 1, SWITCH 12, 30) are adapted to perform, during the step of determining whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12), the determination on only a predetermined part of the receiving device (FIG. 1, SWITCH 12) information; regarding claim 45, wherein the predetermined part of the receiving device (FIG. 1, SWITCH 12) information is a predetermined bit of the receiving device (FIG. 1, SWITCH 12) information; regarding claim 46, wherein the receiving device (FIG. 1, SWITCH 12) information is a bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) and wherein all devices (FIG. 1, SWITCH 12, 30) are adapted to, during the altering step, shift the bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) a predetermined number of bits; regarding claim 47, wherein all devices (FIG. 1, SWITCH 12, 30) are adapted to have an identical operation; regarding claim 48, wherein all devices (FIG. 1, SWITCH 12, 30) are identical; regarding claim 49, a method of switching a data packet in a switching unit comprising: a plurality of devices (FIG. 1, SWITCH 12, 30) adapted to receive incoming data

packets from an external network on an input port and transmit outgoing data packets through an output port to said external network, means for determining, for each incoming data packet, a receiving device (FIG. 1, SWITCH 12) to receive and output the data packet and for generating corresponding receiving device (FIG. 1, SWITCH 12) information, and means for interconnecting the plurality of devices (FIG. 1, SWITCH 12, 30) in a ring (FIG. 1, DATA RING 18, CONTROL RING 24) configuration so as to enable communication of data packets between the plurality of devices (FIG. 1, SWITCH 12, 30), transporting means interconnecting the determining means and the devices (FIG. 1, SWITCH 12, 30) in a daisy chain manner, the determining means being positioned at one end of the daisy chain and a final device (FIG. 1, SWITCH 12) at another end thereof, the method comprising, in each device (FIG. 1, SWITCH 12), the steps of: receive at least part of a data packet and pertaining receiving device (FIG. 1, SWITCH 12) information, determine, on the basis of the receiving device (FIG. 1, SWITCH 12) information, whether the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), copy (FIG. 8, STEP 704) the at least part of the data packet if it is intended for the actual device (FIG. 1, SWITCH 12), alter the receiving device (FIG. 1, SWITCH 12) information received, and forward the at least part of the data packet and altered pertaining receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12) along the interconnecting means (FIG. 1, lines 9 and 33); regarding claim 50, wherein all devices (FIG. 1, SWITCH 12, 30) perform, during the step of determining whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12), the same determination method; regarding claim 51, wherein all devices (FIG. 1, SWITCH 12, 30) perform, during the step of determining whether the at least part of the data packet is intended for the device (FIG. 1,

SWITCH 12), the comparison on a predetermined part of the receiving device (FIG. 1, SWITCH 12) information, all devices (FIG. 1, SWITCH 12, 30) performing the comparison at the same position in the receiving device (FIG. 1, SWITCH 12) information; regarding claim 52, wherein the predetermined part of the receiving device (FIG. 1, SWITCH 12) information is a predetermined bit of the receiving device (FIG. 1, SWITCH 12) information; regarding claim 53, wherein the receiving device (FIG. 1, SWITCH 12) information is a bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) and wherein all devices (FIG. 1, SWITCH 12, 30), during the altering step, shift the bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) a predetermined number of bits; regarding claim 54, wherein all devices (FIG. 1, SWITCH 12, 30) have an identical operation; regarding claim 55, wherein all devices (FIG. 1, SWITCH 12, 30) perform, during the altering step, the same altering procedure; regarding claim 56, wherein the altering procedure is a shifting of a bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) a predetermined number of bits; regarding claim 57, the device (FIG. 1, SWITCH 12) comprising: means for receiving at least part of a data packet and pertaining receiving device (FIG. 1, SWITCH 12) information, means for determining, from the receiving device (FIG. 1, SWITCH 12) information, whether the pertaining at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), means for copying (FIG. 8, STEP 704) the at least part of the data packet if the at least part of the data packet is intended for the actual device (FIG. 1, SWITCH 12), means for altering the receiving device (FIG. 1, SWITCH 12) received, and means for forwarding the at least part of

the data packet and altered pertaining receiving device (FIG. 1, SWITCH 12) information to a subsequent device (FIG. 1, SWITCH 12); regarding claim 58, the device (FIG. 1, SWITCH 12) being adapted to perform the determination of whether the at least part of the data packet is intended for the device (FIG. 1, SWITCH 12) on only part of the receiving device (FIG. 1, SWITCH 12) information; regarding claim 59, wherein the receiving device (FIG. 1, SWITCH 12) information is a bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) and wherein the device (FIG. 1, SWITCH 12) is adapted to, during the altering step, shift the bit map (FIG. 4B, destination bit map having four destination device ID fields 436, 438, 440, and 442; FIG. 9B, STEPS 738b, 741b, 745b) a predetermined number of bits. See column 1-35.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Neiger (US 6,377,582) discloses a decentralized ring arbitration method.

Raatikainen et al. (US 5,886,992) discloses a ring system.

Tanaka et al. (US 5,339,317) discloses a packet communication network.

Goertz (US 4,755,991) discloses a telecommunication system.

Turner (US 4,718,061) discloses a communication network.

Nelson et al. (US 4,679,191) discloses a variable bandwidth switching system.

Von Sichart et al. (US 4,661,952) discloses a method for transmitting data.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang B. Yao whose telephone number is 571-272-3182. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KWANG BIN YAO
PRIMARY EXAMINER

Kwang B. Yao
August 31, 2005